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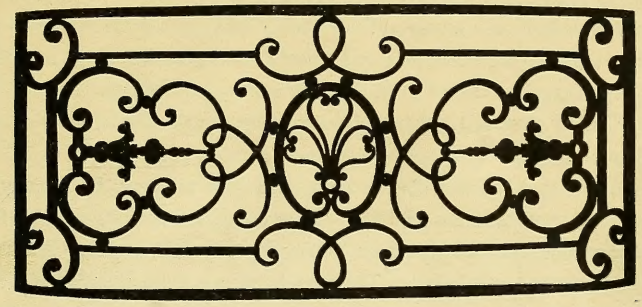
WITH HAMMER AND TONGS

MALLEABLE METALS IN DIVERSE DESIGNS



AN EXHIBITION AT THE COOPER UNION
MUSEUM FOR THE ARTS OF DECORATION
COOPER SQUARE AND SEVENTH STREET
FEBRUARY 4TH THROUGH MARCH 22ND
1941

WITH HAMMER AND TONGS

An Introduction by SAUL YALKERT
Division of Industrial Design, Cooper Union Art School

THE exhibition, *With Hammer and Tongs*, calls attention to a selection of objects of malleable metal drawn principally from the Museum's permanent collection. The transference of these objects from their accustomed settings to the special exhibition area gives them a new emphasis. This is significant both for the outside visitor and the student of the Cooper Union Art School. The visitor benefits by the exhibition's interpretive function. The student, a native member of the Museum's public for whom the permanent collection is a constant reference source, gains additional instruction from the changing exhibitions, and becomes more pointedly aware of the similarity of purpose shared by the Art School and the Museum. His mind is clarified by these restatements of his problems outside the boundaries of his classroom.

Industrial design teaching is formulated here to cover, by analogy, the existent practices in the field and factory today. It embraces machine fabrication, in both limited production and mass production, of many objects from accessories to heavy industry. These products, to achieve organic and esthetic unity, and to incorporate beauty as well as usability, must be designed to express the tool and to meet the requirements of the material, the price, and the psychological appeal. Out of the materials laboratory comes an appetite for exploration, a feeling for the inherent aspects—tactile, structural, and constructural—of material. A non-rigid, experimental method opens up fresh frontiers of work, and a series of tactile studies for the sharpening of visual sensory perceptions concurs with instruction in hand and power tools. The precise manner of tooling a metal, for example, its susceptibility to various types of tooling, are experimented with, and the immediate results and evidences are recorded. A step by step analysis develops an objective or critical attitude and shows context and approach to be inseparable in industrial design.

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With hammer and tongs/
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The modern designer chooses materials for their esthetic and technical characteristics. His choice of one of many equally suitable materials is governed by those of its physical traits which afford the widest exploitation for the best esthetic result. Dominant attributes of the selected material and its unique fitness for the projected design are stressed: for example, the intrinsic quality and the grain in wood, the hardness and workability of metal, the fictile nature of plastics, the enduring temper of stone, the transparency of glass. Materials are combined for color, contrast, and the elimination of sensory fatigues. The technical factors determining choice are the fitness, facture, and responsiveness of the material.

The ready yielding of metal to precise surface articulation depends upon the tool used and the degree of malleability. *Repoussé*, either intaglio or relief, is achieved by hammering or pressing. Spinning is the exerting of pressure upon metals against revolving forms called chucks. More complex machine methods of forming are die pressing, rolling, and extruding. Metal is one of the few materials perfectly adapted to either manual or machine production, since its malleability is no longer a static quality. Through the wizardry of modern metallurgy, malleability can be precisely determined, and any given degree produced, the hardness or softness established and maintained at whatever point it is required. The manual craftsman generally was governed by malleability, and his only method of altering it was by pressure, such as that of beating or hammering, or in the case of iron, by tempering. The modern craftsman can not only govern this important quality by changing the carbon content, by heat treatment, or by the introduction of alloys, but can choose among new metals and alloys which were not available to the older craftsman.

The present exhibition should serve to remind both visiting public and student that it is material, the beauty and latent strength of substance in all its kinds, which has challenged man's creative efforts. And however simple or complex man's environment, the basic reason for the transfer of substance into created form is use. Into this great domain is fitted whatever is in his museums, his home, his work. He learns by knowing what has been made, he makes with his knowledge of what is his to use.

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SELECTED REFERENCES

In the Museum Library relating to the Design and Technique of Hand-Wrought Metal

GENERAL

ALLEMAGNE, HENRY RENÉ D'. Les accessoires du costume et du mobilier depuis le treizième jusqu'au milieu du dixneuvième siècle. Paris, Schemit, 1928. 3 v. front., CCCXCIII pl., facsims. F.

Many illustrations of objects in malleable metal.

AMERICAN NUMISMATIC SOCIETY, NEW YORK. Numismatic notes and monographs, no. 1–91. New York, American numismatic society, 1920–date. illus. 12mo.

EMILIO, LUIS FENOLLOSA. The Emilio collection of military buttons . . . in the museum of the Essex institute, Salem, Mass. Salem, Mass., The Essex institute, 1911. xx, 264 p. 10 pl. 8vo.

THE ENCYCLOPAEDIA britannica. 14th ed. A new survey of universal knowledge. London, New York, Encyclopaedia britannica [c1932] 24 v. illus., plates (part col.) ports., maps (part double) facsims., diagrs. 4to.

See particularly: *Arms and armour, Chasing, Die sinking, Embossing, Filigree, Forging, Iron in art, Jewellery, Mint, Numismatics—Technique and art, Pewter, Pressed metal, Repoussé, Silversmiths' and goldsmiths' work.*

FABRICZY, CORNELIUS VON. Italian medals. London, Duckworth, 1904. vii, 223 p. front., XL pl. 4to.

Medals and medallists of the quattro- and cinquecento.

FALLOU, LOUIS. Le bouton uniforme français (de l'ancien-régime à fin juillet 1914). Colombes (Seine) "La Giberne," 1915. 327 p. illus., 10 col. pl. (incl. front.) F.

HAVARD, HENRY. Dictionnaire de l'ameublement et de la décoration depuis le XIIIe siècle jusqu'à nos jours. Paris, Quantin [1894] 4 v. illus., plates (part col.) F.

See particularly: *Argent, Argenterie, Dinanderie, Fer, Or, Orfèvre, Orfèvrerie, Repoussé, Serrure, Serrurerie.*

HAYWARD, ARTHUR H. Colonial lighting. Boston, B. J. Brimmer [1923] xxv, 159 p. front., illus., plates. 8vo.

Many illustrations of metal lamps and lighting devices.

HORTH, A. C. Repoussé metalwork; a scheme of sheet metalwork for schools and amateurs. London, Methuen [1905] xii, 103 p. incl. illus., plates, diagrs. 8 pl. (incl. front.) 12mo. (Text-books of technology)

RECUEIL de planches de l'encyclopédie, par ordre de matières. Paris, Panckoucke [etc., etc.] 1783–85. 4 v. of plates. F.

This and the following contain numerous plates describing techniques in working metals.

RECUEIL de planches sur les sciences, les arts libéraux, et les arts méchaniques, avec leur explication. Paris, Briasson, 1742–52. 11 v. of plates. F.

STONE, GEORGE CAMERON. A glossary of the construction, decoration and use of arms and armor in all countries and in all times, together with some closely related subjects. Portland, Me., The Southworth press, 1934. 694 p. front., illus. F.

VICTORIA AND ALBERT MUSEUM, LONDON. DEPARTMENT OF ENGRAVING, ILLUSTRATION AND DESIGN. Old English pattern books of the metal trades, a descriptive catalogue of the collection in the museum. London, H. M. Stationery off., 1913. 38 p. XXIV pl. (facsims.) incl. front. 8vo.

VIOLLET-LE-DUC, EUGÈNE EMMANUEL. Dictionnaire raisonné du mobilier français de l'époque Carlovingienne à la Renaissance. Paris, Morel, 1874–75. 6 v. illus., plates (part col.) 8vo.

See *Le serrurier*, v.1, p. 389–94; *Orfèvrerie*, v. 2, p. 169–239.

GOLD AND SILVER

ARTIÑANO Y GALDÓCANO, PEDRO. Católogo de la exposición de orfebrería civil española. Madrid, Mateu, 1925. 163 p. 42 pl. F.

BAPST, GERMAIN. Études sur l'orfèvrerie française au XVIIIe siècle; les Germain, orfèvres-sculpteurs du roy. Paris, J. Rouam, 1887. xxxi, 254 p. front., illus., 5 pl. 8vo.

—Le musée rétrospectif du métal à l'exposition de l'Union centrale des beaux-arts, 1880. Paris, A Quantin, 1881. iv, 104 p. 10 pl. (1 double) 4to.

BEDINGER, MARGERY. Navajo Indian silverwork. Denver, J. Vanmale [c1936] 43 p. v pl. (incl. front.) 4to. (Old West series, no. 8)

One of the few studies on the silverwork of the American Indian.

BIGELOW, FRANCIS HILL. Historic silver of the colonies and its makers. New York, Macmillan, 1917. xxiv, 476 p. front., illus. 8vo.

BOUILHET, HENRI. L'orfèvrerie française au XVIIIe et XIXe siècles. Paris, H. Laurens, 1908–12. 3 v. illus., plates, ports., facsims. 4to.

Library has v. 1: L'orfèvrerie française au XVIIIe siècle (1700–1789).

BURLINGTON FINE ARTS CLUB, LONDON. Exhibition of a collection of silversmiths' work

of European origin. London, Burlington fine arts club, 1901. lvii, 185 p. 120 pl. F.

Brief discussion of technique in introduction.

Carré, Louis. A guide to old French plate. With a foreword by E. Alfred Jones. New York, C. Scribner's sons, 1931. xxvi, 270 p. illus., plates. 12mo.

—Les poinçons de l'orfèvrerie française du quatorzième siècle jusqu'au début du dix-neuvième siècle. Paris, L. Carré, 1928. xxiii, 355 p. illus., xiv pl. (incl. front., fold. map, fold. tab.) F.

Dawson, Nelson. Goldsmiths' and silversmiths' work. London, Methuen [1907] xx, 266 p. front., illus., 50 pl. 4to. (The connoisseur's library)

Gardner, John Starkie, ed. Old silverwork, chiefly English, from the xvth to the xviiith centuries; a catalogue of the unique loan collection exhibited in 1902 at St. James's court, London. London, B. T. Batsford; New York, S. Buckley, 1903. xiv, 198 p. 121 pl. F.

Germain, Pierre. Elements d'orfevrerie divisés en deux parties de cinquante feuilles chacune. Paris, L'auteur, 1748. 5 l. 100 pl. 8vo.

Jean Jacques Pasquier, engraver; plates 70–72, 78, 81–82, 86 drawn by Jacques Roëttiers iii.

Havard, Henry. Histoire de l'orfèvrerie française. Paris, May & Motteroz, 1896. 2 v. illus., xl pl. (part col.) F.

Prehistoric times through the 19th century.

—L'orfèvrerie. Paris, C. Delagrave [1895] viii, 170 p. front., illus. 8vo. (Les arts de l'ameublement)

Development of technique and design through the 19th century.

Howard, Montague. Old London silver, its history and its marks. New York, C. Scribner's sons; London, B. T. Batsford, 1903. xvi, 405 p. incl. illus., plates, ports. col. front., 5 col. pl. 4to.

Jones, E. Alfred. Illustrated catalogue of the collection of old plate of J. Pierpont Morgan, esquire. Priv. ptd. London, Bemrose & sons, 1908. liv, 108 p. xcviii pl. F.

One hundred ten pieces of English plate and forty-nine foreign, chiefly German. Descriptions of object illustrated include technique employed.

—The old silver of American churches. Letchworth, Eng., Arden press, priv. ptd. for the National society of colonial dames of America, 1913. lxxxvii, 566 p. illus., cxlv pl. F.

Over two thousand pieces of silver described and more than a thousand illustrated.

—Old English gold plate. London, Bemrose & sons, 1907. xxiii p., 35 numb. l. xxxvii pl. F.

Masson. Nouveaux desseins pour graver sur l'orfeverie, inventés et graves par le sieur Masson. Paris, I. Mariette [n.d.] 6 pl. F.

Matthews, Washington. Navajo silversmiths. (In U. S. Bureau of American ethnology. 2d Annual Report, 1880/81. Washington, Govt. print. off., 1883. p. 167–178. 5 pl. 4to)

Detailed description of tools and methods of manufacture.

Michel, Francois Xavier (dit Francisque). Recherches sur le commerce, la fabrication et l'usage des étoffes de soie, d'or et d'argent, et autres tissus précieux en Occident, principalement en France, pendant le moyen age. Paris, Crapelet, 1852–54. 2 v. 8vo.

The most frequently cited authority in this field. No illustrations.

Nocq, Henry. Orfèvrerie civile française du xvie au début du xixe siècle. Paris, A. Lévy [1930?] 2 v. lxxii pl. F.

Olsen, Ivan Munk. Sølvsmeden Georg Jensen. København, A. Jensen, 1937. 95 p. illus. (incl. port., facsim.) 4to. (Dansk kunst iv)

Text in Danish and English.

Phillips, Philip A. S. Paul de Lamerie, citizen and goldsmith of London; a study of his life and work, a.d. 1688–1751. London, B. T. Batsford, 1935. xvi, 115 p. front., illus., plates, facsims. F.

Numerous fine illustrations of the work of one of England's greatest artist-craftsmen.

Pollen, John Hungerford. Gold and silversmiths' work. London, Chapman and Hall [1879] viii, 160 p. illus. 8vo. (South Kensington museum art handbooks)

Rosenberg, Marc. Der goldschmiede merkzeichen; 3. erweit. und illus. aufl. Frankfurt am Main, Frankfurter-verlags-anstalt, 1922–28. 4 v. illus., 117 pl. on 59 l. 8vo.

The most comprehensive survey of European makers' and hall-marks.

Sangiorgi, Giorgio. Oro testile e saggio tecnico-analitico. (In his Contributi allo studio dell'arte tessile. Milano, Roma, Bestetti & Tumminelli [192–] p. 23–[32] illus., col. pl. 4to)

Smith, H. Clifford. Jewellery. New York, G. P. Putnam's sons; London, Methuen, 1908. xlvii, 409 p. illus., liv pl. (3 col., incl. col. front.) 4to. (The connoisseur's library)

Solis, Virgil. Drinking-cups, vases, ewers, and ornaments designed for the use of gold and silversmiths. Twenty-one fac-similes of extremely rare etchings by Virgil Solis. London, J. Rimell, 1862. 21 pl. 4to.

Wenham, Edward. Domestic silver of Great Britain and Ireland. New York, London [etc.] Oxford university press, 1931. xxiii, 186 p. front., xcv pl. on 48 l. 4to.

Wilson, H. Silverwork and jewelry; a textbook for students and workers in metal. New York, D. Appleton, 1903. 346 p. incl. front., illus., xvi pl. 12mo. (The artistic crafts series of technical handbooks)

ALLEMAGNE, HENRY RENÉ D'. Ferronerie ancienne . . . du XIIe à la fin du XVIIIe siècle. Paris, J. Schemit, 1924. 2 v. CCCXV pl. F.

Fine illustrations of the comprehensive collection of iron work of the Musée le Secq des Tournelles at Rouen.

ARMOR AND ARMS CLUB, NEW YORK. Catalogue of a loan exhibition of Japanese sword guards, held at the Metropolitan museum of art, New York city, July 15 to October 15, 1921. [New York, R. A. Haag, printer, c1922] xxi p., 73 l. mounted photographs. 8vo.

ARTÍÑANO Y GALDÓCANO, PEDRO MIGUEL DE. Exposición de hierros antiguos españoles. Católogo. Madrid [Mateu] 1919. ciii, 178 p. illus. F.

BABEL, P. E. Premier livre de nouveaux desseins de serrureries. Inventé et gravé par Babel. Paris, Aveline [n.d.] 13 pl. F.

Balconies, grilles, railings.

BONTHOMME, GABRIEL. Ier, 2e et 3e cahier de serrurerie, inv. et dess. par B . . . en 1777. [Paris, n.d.] 18 pl. F.

BRISVILLE, HUGUES. Diverses pieces de serruriers inventées par Hugues Brisville, maitres serrurier a Paris, et gravez par Jean Berain. Paris, L'auteur, 1662. 14 pl. 8vo.

Jean Berain, *fils*, engraver.

BRÜNING, ADOLF. Die schmiedekunst seit dem ende der renaissance. Leipzig, H. Seeman [1902] 146 p. illus., pl. 4to. (Monographien des kunstgewerbes, III)

BYNE, ARTHUR. Rejería of the Spanish renaissance; a collection of photographs and measured drawings, with descriptive text. New York, The Hispanic society of America, 1914. vii, 101 p. incl. col. front., XXVI (i.e. 27) pl. F. (Hispanic society publications, no. 87)

Printed on one side of leaf only.

—Spanish ironwork. [New York] The Hispanic society of America, 1915. xxxiii, 143 p. front., illus., plates. 8vo. (Hispanic society publications, no. 89)

CAILLOUET. Ier—IVe cahier de serrurerie. Paris, Chereau [n.d.] 24 pl. F.

Augustin Foin and de Saint-Morien, engravers.

CORTES, ANTONIO. Hierros forjados. Mexico, Museo nacional de arqueologia, historia y etnografía, 1935. 166 p. XXII, 80 pl. 4to.

COTTINGHAM, LEWIS NOCKALLS. The smith and founder's director, containing a series of designs and patterns for ornamental iron and brass work. [2d ed. London, The author, 1824] [4] p. 71 pl. F.

Designs and patterns for gates, balconies, window-guards, railings, street lamps, etc. for designers and metal workers.

CUVILLIÉS, FRANÇOIS DE, *père*. Livre de serrurerie, nouvellement inventé, par François de Cuvilliés; gravé par Charle Albert de Lespilliez. Paris [n.d.] 12 pl. F.

FAY, J. B. Nouveau cahier de serrurerie de grilles et balcons a la moderne. Fay del. et sculp. Paris, Mondhare [n.d.] 6 pl. F.

FERRARI, GIULIO. Il ferro nell' arte italiana; cento tavale riproduzioni in gran parte inedite di 169 soggetti del medio evo, del rinascimento, del periodo barocco e neoclassico, raccolte e ordinate con testo esplicativo. Milano, U. Hoepli [1910] 221 p. incl. 100 pl. F. (Collezione artistica Hoepli)

FONTAINE, JACQUES VALENTIN. Nouveau livre de serrureries contenant divers morceaux utiles à la decoration des églises, &c. 9 pl.; Nouveau livre d'etudes et principes de serrureries. 12 pl.; Livre de differens couronnemens de serrurerie. 7 pl. Paris, F. Chereau [n.d.] F.

Three suites bound together; the last signed J. V. Fontaine, in. & sculp.

FORTY, JEAN FRANÇOIS. Ier, IIe et IIIe livre. Oeuvres de serrurerie. J. F. Forty inv. et sculp. Paris [n.d.] 18 pl. F.

Balconies, grilles, banisters.

GARDNER, JOHN STARKIE. English ironwork of the XVIIth & XVIIIth centuries; an historical & analytical account of the development of exterior smithcraft. New York, W. Helburn; London, B. T. Batsford [1911] xxxvi, 336 p. incl. front., illus. LXXX pl. 8vo.

—Ironwork [from the earliest times to the end of the eighteenth century, excluding English work. London] Chapman and Hall, 1893–96. 2 v. front. (v. 2) illus. 12mo.

GUÉRARD, NICOLAS. [Various suites of *serrurerie* and *arquebuserie*] Paris, N. Guérard [n.d.] 51 pl. F.

HAVARD, HENRY. Le serrurerie. Paris, C. Delagrave [189–] 174 p. front., illus. 8vo. (Les arts de l'ameublement)

1. ptie.: Fabrication; 2. ptie.: Résumé historique.

HÖVER, OTTO. Das eisenwerk: die kunstformen des schmiede-eisens vom mittelalter bis zum ausgang des 18. jahrhunderts. Berlin, E. Wasmuth [1927] xlvi p. illus., 320 pl. on 160 l. F. (Wasmuth's werkkunst-bücherei, 3. bd.)

JACQUARD, ANTOINE. Differents portraitz pour les serruriers, nouvellement inventez. 1615. 6 pl. 16mo.

JOUSSE, MATHURIN. La fidelle ouverture de l'art de serrurier; ou l'on void les principaux preceptes, desseings, et figures touchant les experiences et operations mannuelles du dict art, ensemble un petit traicté de diverses trempes. La Flèche, G. Griveau, 1627. 152 p. illus. F.

A notable work, containing twenty-two copper and thirty wood engravings.

LABARTA, LUIS. Hierros artísticos; colección de láminas representando los más notables trabajos de forja, particularmente los debidos

á los maestros Castellanos y Catalanes. Texto en español y francés. [Barcelona, S. Seix, 1901] 2 v. 200 pl. 4to.

LAMOUR, JEAN. Recueil des ouvrages en serrurerie, que Stanislas le bien-faisant, roy de Pologne, duc de Lorraine et de Bar, a fait poser sur la place royale de Nancy, à la gloire de Louis le bien-aimé; composé et exécuté par Jean Lamour son serrurier ordinaire avec un discours sur l'art de serrurerie et plusiers autres desseins de son invention. Paris, François [n.d.] [9] p. 20 pl. F.

METMAN, LOUIS. Le métal. Paris, D. A. Longuet [1909] 2 v. plates. F.
Library has v. 1: Le fer.

MURPHY, BAILEY SCOTT. English and Scottish wrought ironwork; a series of examples of English ironwork of the best periods, together with most of the examples now existing in Scotland, with descriptive text. London, B. T. Batsford, 1904. 14 p. 80 pl. F.

ORNAMENTAL iron work, or designs in the present taste, for fan-lights, stair-case-railing, window-guard-irons, lamp-irons, palisades, and gates. With a scheme for adjusting designs with facility and accuracy to any slope. London, J. and J. Taylor [1815?] 21 pl. 4to.

SCHUBERT, ALFRED. Alte kunstschmiedearbeiten aus dem XVI., XVII. und XVIII. jahrhundert: thore, gitter, grab-und treppengeländer, grabkreuze, oberlichte, bekrönungen, füllungen, bänder, schlüsselschilder, thürklopfer, geräthe etc. Nach den originalen aufgenommen. 2. aufl. Berlin, New York, B. Hessling [189–] 20 pl. F.

SHAW, HENRY. A series of examples of ornamental work, partly collected from various public and private buildings, and partly designed by H. Shaw. London, H. Shaw, 1825. 25 pl. 4to.
Railings, lamps, street lamps, etc.

SMALL, TUNSTALL. English wrought ironwork of the late 17th and early 18th centuries; a portfolio of full-size details. New York, W. Helburn; London, The architectural press [1929] iv p. 20 pl. F.

SONN, ALBERT H. Early American wrought iron. New York, C. Scribner's sons, 1928. 3 v. fronts., illus. (incl. facsims.) 320 pl. F.
A comprehensive collection describing door hardware, household appliances, and architectural ironwork.

TIJOU, JEAN. A new book of drawings invented by Jean Tijou. Containing severall sortes of iron work as gates, frontispeices, balconies, staircases, pannells, &c. London, The author, 1693. 20 pl. F.
Title in English and French.
Pieter van der Banck, Michiel van der Gucht, Peter Paul Bouche, Blaise Gentot, engravers.

TWOPENNY, WILLIAM. English metal work, ninety-three drawings. With a preface by Laurence Binyon. New York, J. Love; London, A. Constable, 1906. 15 p. XCIII pl. 4to.
"Intended for craftsmen's use rather than for antiquarian study." p. 8.

VALLÉE, S. Divers livres de serrurerie et d'ornement invente et gravez par S. Vallée. Paris, S. Vallée, [n.d.] 7 pl. F.
Balconies, railings.

—Livres de balcons. [n.p., n.d.] 12 pl. F.
First two pieces signed "faits par G. Vallée."

OTHER METALS

L'ART du plombier et fontainier, par M. * * * [Paris, L. F. Delatour] 1773. 206 p. XXIV fold. pl. F.
Very interesting illustrations on working in lead.

FULLER, JOHN. Art of coppersmithing; a practical treatise on working sheet copper into all forms. 4th ed., rev. New York, D. Williams, 1911. 319 p. illus. (incl. plans) fold. plates, diagrs. 8vo.

GEERLINGS, GERALD KENNETH. Metal crafts in architecture; bronze, brass, cast iron, copper, lead, current developments, tin, lighting fixtures, specifications. New York, C. Scribner's sons, 1929. vi, 202 p. front., illus., diags. 4to.
Treats largely of metals in cast forms, but considers their adaptability to other techniques as well.

LETHABY, WILLIAM RICHARD. Leadwork, old and ornamental, and for the most part English. London and New York, Macmillan, 1893. viii, 148 p. illus. 8vo.

MASSÉ, HENRI JEAN LOUIS JOSEPH. Chats on old pewter. London, T. F. Unwin, 1911. 422 p. incl. front., illus., 51 pl. 8vo.

—The pewter collector; a guide to English pewter with some reference to foreign work. New York, Dodd, Mead, 1921. xiii, 15–314 p. XVI pl. (incl. front.) 8vo. (The collectors' series)

MOORE, N. HUDSON. Old pewter, brass, copper, and Sheffield plate. New York, F. A. Stokes [c1905] xiii, 229 p. plates. 8vo.
Good description of processes of working in these metals.

ROSE, AUGUSTUS FOSTER. Copper work; a text book for teachers and students in the manual arts. 3d ed. Worcester, Mass. The Davis press, 1909. 118 p. incl. front., illus. 8vo.

VEITCH, HENRY NEWTON. Sheffield plate, its history, manufacture and art; with makers' names and marks, also a note on foreign Sheffield plate. London, G. Bell and sons, 1908. xiv, 359 p. incl. illus., LXXV (i.e. 74) pl. front. (port.) 4to.

WEAVER, LAWRENCE. English leadwork, its art and history. London, B. T. Batsford, 1909. xv, 268 p. illus., plates. 4to.

WOOD, L. INGLEBY. Scottish pewter-ware and pewterers. Edinburgh, G. A. Morton [etc., etc., 1907] xii, 223 p. 36 pl. (incl. front.) 4to.

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